Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [X] To Chairmen
(D) [-] No distribution

Datasheet for the decision of 17 March 2014

Case Number: T 1162/13 - 3.5.02

Application Number: 05109583.4

Publication Number: 1653628

IPC: H03M7/30, H04N7/26

Language of the proceedings: EN

Title of invention:
Lossless adaptive golomb/rice encoding and decoding of integer data using backward-adaptive rules

Applicant:
Microsoft Corporation

Relevant legal provisions:
EPC Art. 56, 83, 111(1), 123(2)

Keyword:
Amendments - intermediate generalisation (no)
Discretion to exercise power of department of first instance
Sufficiency of disclosure - (yes)
Inventive step - (yes)

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 1162/13 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 17 March 2014

Appellant: (Applicant)	Microsoft Corporation One Microsoft Way Redmond, Washington 98052-6399 (US)
Representative:	Grünecker, Kinkeldey, Stockmair & Schwanhäusser Leopoldstrasse 4 80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 7 December 2012 refusing European patent application No. 05109583.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: M. Ruggiu
Members: R. Lord
W. Ungler

Summary of Facts and Submissions

I. This is an appeal of the applicant against the decision of the examining division to refuse European patent application No. 05 109 583.4. The reason given for the refusal was that claim 1 according to each of the requests which had been admitted into the proceedings defined subject-matter extending beyond the content of the application as originally filed, thus contravening Article 123(2) EPC. The claims on which this decision was based were those of the main request filed with letter dated 4 October 2012 and those of the auxiliary request II, filed as auxiliary request with letter dated 4 October 2012 and renumbered as auxiliary request II during the oral proceedings of 9 November 2012.

II. The following documents cited during the examination procedure are relevant for this decision:

D1: M. J. Weinberger et al, "The LOCO-I Lossless Image Compression Algorithm: Principles and Standardization into JPEG-LS", IEEE Transactions on Image Processing, vol. 9, no. 8, August 2000, pages 1309 to 1324, and

D2: M. H. M. Costa and H. S. Malvar, "Efficient Run-Length Encoding of Binary Sources with Unknown Statistics", Microsoft Research Technical Report MSR-TR-2003-95, 19 December 2003.

III. In the notice of appeal dated 8 February 2013 the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request of 4 October 2012, or on the basis of the auxiliary request I filed with that notice of appeal, or on the basis of the auxiliary request II of

4 October 2012. It is implicit that the pages 1, 1a and 1b of the description filed with letter dated 6 November 2012 form part of each of these requests.

IV. Claim 1 according to the appellant's main request reads as follows:

"A process for encoding digital integer data including integer vectors having integer values x, the process comprising:

defining a parameter u as 2x if x≥0; or defining u as -2x-1 if x<0;

encoding each of the integer values using adaptive Golomb/Rice encoding and a Golomb/Rice parameter, in the following called G/R parameter, k to generate a codeword for each of the integer values;

defining a fixed scaling parameter L;

defining the scaled G/R parameter K as K=k multiplied by L;

updating the scaled G/R parameter K after each codeword is generated using backward adaptation rules;

defining an adaptation value p, wherein p=u>>k, meaning p equals u in binary representation shifted to the right by k places;

characterized by

replacing K with (K-B3) if p=0, wherein B3 is a positive integer constant,

leaving K unchanged if p=1,

replacing K with (K+p) if p>1; and

then obtaining an adapted value of k with k being the integer value of K/L."

V. The appellant argued essentially as follows.

The passage on page 11, lines 20 to 21 of the description provided a proper basis for the claimed feature "replacing K with (K-B3) if p=0, wherein B3 is a positive integer constant". Neither the claim nor the original description stated that the value of the parameter B3 was irrelevant. Therefore claim 1 of the main request did not contravene Article 123(2) EPC.

The absence of any disclosure of a value for B3 did not result in an insufficiency of disclosure within the meaning of Article 83 EPC, because the teaching of page 32, lines 15 to 22 of the application provided a sufficiently clear and complete basis for the skilled person to be able to deduce a reasonable value or value region for B3 based on how far apart the values of u and 2^k are from each other.

In the procedure before the first instance (see letter of 4 October 2012, section "4. Inventive step"), the applicant argued that the combination of fractional adaptation with the adaptation rule defined in the claim went beyond what was taught by document D2, and differed from what was suggested by D1. This combination resulted in the improved adaptation to input data changes described on pages 30 to 32 of the application.

Reasons for the Decision

1. The appeal is admissible.

2. Added subject-matter (Article 123(2) EPC)

2.1 The board understands the reasoning of the decision under appeal with respect to claim 1 of the main request to be based on the interpretation by the examining division that the disclosure relating to the parameter B3 in the description of the original application implied a restriction on its value in order to achieve the described technical effect, whereas the claim specified no restriction on its value, so that the claim represented an undisclosed intermediate generalisation of the original disclosure.

2.2 The board does not find this argumentation convincing, since the claim, when interpreted by a skilled person in the technical field of Golomb/Rice codes, does imply a restriction on that value. As argued by the appellant, the claim requires that the process provides backward adaptive encoding, so that the value of B3 has to be consistent with achieving that effect, and is thus at least in general terms consistent with the restriction on this value implied in the corresponding passage of the description as cited in the decision under appeal. The board notes moreover that it would be immediately apparent to the skilled person that in Golomb/Rice coding the parameter k, and hence also the parameter K, cannot be negative, because the parameter m cannot be less than one (see for instance Table 1 of the application). It thus follows directly that the value of B3 must be selected to be sufficiently low that the value of K-B3 is never less than zero. Moreover, the discussion in the description relating to

avoiding the effect of oscillation (in the paragraph spanning pages 29 and 30) can be seen as suggesting only that a further advantage can be achieved by an additional restriction on the value of B3, and not as restricting the overall disclosure of the application. The board is therefore of the opinion that claim 1 according to the main request does not define that the parameter B3 can take any positive integer value, but rather that the value of this parameter is restricted in a similar manner to what was implied by the description of the application as originally filed. Hence the board concludes that claim 1 of the main request does not represent an intermediate generalisation with respect to the original disclosure, so that the claim does not define subject-matter extending beyond the content of the application as originally filed.

3. *Continuation of the procedure*

For the above reasons the board is of the opinion that the reasons given in the decision under appeal do not prejudice the granting of a patent. The board notes however that during the first instance proceedings the examining division raised a number of further objections to the application. Since those objections have all been discussed in the applicant's replies to the communications of the division, the board considers it to be appropriate to make use of its discretion under Article 111(1) EPC to also consider those objections.

4. *Sufficiency of disclosure (Article 83 EPC)*

The fact that the application contains no explicit disclosure of a value for the parameter B3 was

furthermore mentioned by the examining division as the basis for an objection under Article 83 EPC (see section 3 of the communication of 13 July 2010), which issue was also addressed by the appellant in his statement of grounds of appeal (letter dated 16 April 2013, section 2.b)). Given that, for the reasons indicated in paragraph 2.2 above, the possible range for this parameter is relatively limited, and given the discussion in the description of the application at page 32, lines 15 to 22 relating to the manner in which the different sections of the adaptation rules influence the encoding process, the board is of the opinion that the skilled person would be able to deduce a suitable value or range of values for this parameter without significant difficulty. The board therefore concludes that the application meets the requirement of Article 83 EPC.

5. Inventive step (Article 56 EPC)

5.1 The independent claim 1 is drafted in the two-part form with the preamble being based on the document D2. The claimed process differs from that disclosed in D2 by the specific backward adaptation rules defined in the first three paragraphs of the characterising portion and by the detail of the definition of the adapted G/R parameter k of the final paragraph.

5.2 As the appellant has argued, the technical effect provided by the invention, as described on pages 30 to 32 of the application, is to improve the tracking of variations in the input data by applying the specified adaptation rules in combination with fractional adaptation. Of particular significance is the adaptation rule applied in the case when the adaptation value p is zero, which goes beyond the non-specific

teaching of D2 in this respect, and is contrary to the teaching of D1 (see page 1316, section "Adaptation Rule in JPEG-LS"), in which the corresponding "adaptation" is in the form of the selection of a different code. Thus the issue raised by the examining division as to what is meant by the expression "oscillation" is not relevant for the assessment of inventive step, because the technical effect achieved by the claimed invention when compared to D2 is of a more general nature. Nonetheless, the board is of the opinion that the skilled person would understand that this term refers to an undesired repeated switching of the G/R parameter between two values, which can occur in particular in encoding processes using adaptation which is not fractional, and which can be suppressed in at least some processes in accordance with the claimed invention.

6. *Other matters*

During the course of the examination procedure the examining division raised a number of further objections to the application. The board considers that these do not preclude the grant of a patent in the form of the present request, for the following reasons.

- The various objections against claims for a "computer-readable medium" are no longer relevant because these claims have been deleted.

- The objections raised with respect to lack of clarity in the definitions of the fractional adaptation, the adaptation value and the adaptation rules have been addressed in claim 1 of the main request by means of completion of the definitions of those aspects of the process based

on definitions in the original dependent claims and description.

- The board does not agree with the objection raised that claims 3 and 4 result in a lack of conciseness because they do not result in any restriction of the claimed subject-matter. In the opinion of the board these claims restrict the type of input data used in the claimed process, and thus inherently restrict the process as a whole. In any case, the board considers that a set of claims comprising only four claims and extending over slightly more than one page can hardly be considered to lack conciseness.

- The prior art of document D2 has been appropriately acknowledged in the amended description. A citation of D1 is not considered to be appropriate, since the adaptation scheme described there is entirely different from that of the application.

The board therefore concludes that the application in the form of the appellant's main request complies with all of the relevant requirements of the EPC. It is hence not necessary for the board to consider the appellant's auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Description
Pages 2 to 34 as originally filed,
Pages 1, 1a and 1b filed with letter dated 6 November 2012,

Claims
Nos. 1 to 4 filed as main request with letter dated 4 October 2012,

Drawings
Sheets 1/9 to 9/9 as originally filed.

The Registrar: The Chairman:

U. Bultmann M. Ruggiu

Decision electronically authenticated